Atlantic Richfield Company

Anthony R. Brown
Project Manager, Mining

4 Centerpointe Drive, 2nd Floor, Suite 200
La Palma, CA 90623-1066
Office: (657) 529-4537
Fax: (657) 529-4559
E-mail: Anthony.Brown@bp.com

January 22, 2018

Mr. Paul Peronard
On-Scene Coordinator
Emergency Response Program (8EPR-SA)
US EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

Delivered via e-mail

Subject: Removal Action Work Plan
Subtask A2 – Seasonal Water Quality and Flow Monitoring Frequency Change Request
Rico-Argentine Mine Site – Rico Tunnels
Operable Unit OU01, Rico, Colorado

Dear Mr. Peronard,

As specified in the *Removal Action Work Plan (RAWP)* dated March 9, 2011 and the *Sampling and Analysis Plan for Surface Water and Groundwater, Rico-Argentine Mine Site – Rico Tunnels, Revision 1*, May 15, 2014, Atlantic Richfield currently collects samples of both groundwater and surface water at the Rico-Argentine Mine Site three times per year. Sampling is seasonal and occurs at the following times:

- Peak Flow (May/June)
- Moderate-to-Low Flow (October/November)
- Low Flow (January/February)

Currently there are nine surface water sampling locations and 45 groundwater sampling locations at the Rico-Argentine Mine Site. Approximately monthly sampling for surface water and groundwater was performed from April 2011 until the end of 2013. In January 2014, the current schedule of sampling three times per year was implemented.

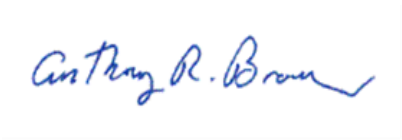
Atlantic Richfield requests that the Low-Flow sampling event be discontinued, reducing the sampling frequency from three times to twice annually. Reasons for this change are as follows:

- **Unsafe Conditions** – Sampling during the winter is often dangerous due to cold temperatures, deep snow, and the large number of sampling locations. In particular, icy and unstable conditions along the river often make access hazardous for sampling personnel. Additionally, digging snow from the 45 groundwater sampling locations, some located in avalanche terrain, exposes sampling personnel to potential injury.
- **Extensive Data History** – Extensive groundwater and surface water sampling and monitoring has been performed at the Rico-Argentine Mine Site since 2011. This has consisted of field measurements and collection of water samples that were tested for numerous analytes. There is a large amount of data which form the basis for a suitable historical perspective.

Due to the large existing data set and the potentially unsafe sampling conditions in winter, Atlantic Richfield requests that the sampling frequency be reduced immediately to twice annually (Peak Flow and Moderate-to-Low Flow only). We are convinced that this will have no negative impact to the project objectives.

Your prompt attention to this matter would be greatly appreciated. Thank you for your consideration.

Sincerely,



Anthony R. Brown
Project Manager

cc: R. Halsey, Atlantic Richfield
T. Moore, Atlantic Richfield
B. Johnson, Atlantic Richfield
N. Block, Esq., Atlantic Richfield
D. Yadon, AECOM
E. Petri, Weston Solutions
S. Riese, EnSci
A. Cohen, Esq., Davis Graham & Stubbs
W. Duffy, Esq., Davis Graham & Stubbs
A. Piggott, Esq., U.S. EPA
R. Peterson, Colorado Dept. of Public Health and Environment
D. McCarthy, Copper Environmental
K. Pfeifer, Copper Environmental

file: Atlantic Richfield Rico Archives, La Palma, CA

Atlantic Richfield Company

Anthony R. Brown
Project Manager, Mining

4 Centerpointe Drive, 2nd Floor, Suite 200
La Palma, CA 90623-1066
Office: (657) 529-4537
Fax: (657) 529-4559
E-mail: Anthony.Brown@bp.com

January 22, 2018

Mr. Paul Peronard
On-Scene Coordinator
Emergency Response Program (8EPR-SA)
US EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

Delivered via e-mail

Subject: St. Louis Tunnel Discharge Constructed Wetland Demonstration
Treatability Study Work Plan
Performance Monitoring Plan Change Request
Rico-Argentine Mine Site – Rico Tunnels
Operable Unit OU01, Rico, Colorado

Dear Mr. Peronard,

As specified in *Appendix B, Performance Monitoring Plan, Revision 1, St. Louis Tunnel Discharge, Constructed Wetland Demonstration, Treatability Study Work Plan,* dated March 2014 and *Appendix B, Performance Monitoring Plan, Addendum 1 – Enhanced Wetland Demonstration, St. Louis Tunnel Discharge, Constructed Wetland Demonstration, Treatability Study Work Plan,* dated November 2015, Atlantic Richfield Company (Atlantic Richfield) currently collects analytical water quality samples and measures field parameters in the wetlands treatment systems at the Rico-Argentine Mine Site monthly throughout the year. In addition, an extensive instrumentation system using numerous multiparameter sondes and flowmeters provides real time field measurements for performance monitoring. The purpose of these data collection activities is to provide adequate information to evaluate technology performance and to provide necessary information for potential future design needs.

Currently there are 22 wetlands analytical sampling locations and 33 field parameter measurement sites at the Rico-Argentine Mine Site. Monthly sampling has occurred for the Constructed Wetland Demonstration (CWD) since September 2014. Monthly sampling for the Enhanced Wetland Demonstration (EWD) has occurred since November 2015.

Atlantic Richfield requests approval of the following sampling changes for the EWD and CWD beginning in February 2018. Each proposed change is explained in greater detail below.

1. Reduction of the sampling frequency from monthly to bimonthly
2. Optimization of analytical and field parameter sampling locations
3. Optimization of the analyte list at select locations
4. Termination of the Plastic Media Tank Test
5. Termination of the Sludge Recycle Test

1. **Reduction of the sampling frequency from monthly to bimonthly**

Monthly wetlands sampling and monitoring has been performed at the Rico-Argentine Mine Site since 2014 (for the CWD) and 2015 (for the EWD). This has consisted of field measurements and collection of monthly water samples that were tested for numerous analytes. There is a large amount of data which form the basis for a suitable historical performance evaluation. Testing has taken place during three annual spring freshet periods at the CWD and two at the EWD. Reducing the sampling frequency to bimonthly will still allow the capture of seasonal variation throughout the year. In addition, the real-time monitoring system will be maintained to provide extensive performance data for each unit operation of each treatment train.

Sampling during the winter also poses a significant health and safety risk due to cold temperatures, deep snow, and the large number of sampling locations. In particular, icy conditions throughout the wetlands can make access hazardous for sampling personnel. Additionally, digging snow from the sampling locations exposes sampling personnel to potential injury. Reducing the sampling frequency will decrease personnel safety risk.

2. **Optimization of analytical and field parameter sampling locations**

The purpose of the CWD and EWD has been primarily to provide adequate information to evaluate treatment technology performance. As data have been collected and evaluated over the past few years, we have determined that certain sampling locations and analytes do not contribute materially to the overall project goals. Treatment system performance can be adequately evaluated without additional data from certain sampling locations. For this reason, the following sampling location modifications are proposed:

Elimination of analytical sampling at the following locations is proposed:

- HSSFWMP06
- HSSFWMP11 (replace in monthly Performance Summary with AC1INF)
- RDMP02

Field parameter monitoring should be eliminated except at the following locations:

- All 22 analytical-sample locations
- HSSFWMP05
- HSSFWMP06
- HSSFWMP07

3. **Optimization of the analyte list at select locations**

In an effort to optimize the CWD and EWD sampling process, the current analyte list and sampling locations have been thoroughly evaluated. The following table shows recommended changes for analytes for optimum system operation and evaluation. Only changes are shown; all other analytes will remain the same. Field parameters will continue to be obtained for all analytical sampling locations, and the real-time monitoring system will still be in place. The optimized analyte list will allow for more efficient data collection and evaluation of technology performance.

Analyte	Recommended Sample Locations	Reason for change
Total Cyanide	None (eliminate tests)	Almost exclusively non-detects
Total Organic Carbon		
Ammonia		
Nitrite/Nitrate		
Phosphorus		
Biological Oxygen Demand	RDEFF, AC2EFF, and AC3EFF	BOD measurements are only critical at treatment train effluents
Total Suspended Solids	OXINF, SB1EFF, SB2EFF, SB3EFF, SFWEFF, MRCEFF	TSS is only critical at the oxidizer influent, the settling basin effluents, the surface flow wetland effluent, and the manganese removal cell effluent. Total metals analyses will still be obtained at the remaining unit operation effluents to provide an indication of solids carryover.
Total Sulfide	AC1INF, AC1EFF, RDEFF, BTEFF, AC2EFF, BT2EFF, and AC3EFF	Total sulfide measurements are only meaningful at locations downstream of anaerobic biotreatment process steps

Acronym List

AC = Aeration Cascade
AC1 = Aeration Channel
BT = Biotreatment Cell
HSSFW = Horizontal Subsurface Flow Wetland
MRC = Manganese Removal Cell
OX = Oxidizer
RD = Rock Drain
SB = Settling Basin
SFW = Surface Flow Wetland

4. Termination of the Plastic Media Tank Test

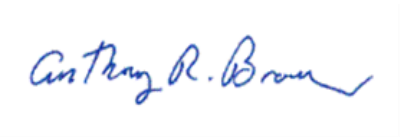
The plastic media tank test installed as part of the *Settling Basin No. 2 Sludge Recycling Test and EWD Plastic Media Tank Test Work Plan* has been in operation since the fall of 2016, having been sampled monthly and at several different flow rates. The purpose of this test was to evaluate potential means for enhancing treatment during freshet periods of increased flow and metal concentrations. Atlantic Richfield believes this test has provided sufficient data for this evaluation and can be terminated.

5. Termination of the Sludge Recycle Test

The sludge recycle test installed as part of the *Settling Basin No. 2 Sludge Recycling Test and EWD Plastic Media Tank Test Work Plan* has been in operation since the fall of 2016. The purpose of this test was to evaluate concepts for increasing sludge density and improved solids settling in the CWD/EWD settling basins. Atlantic Richfield believes this test has provided sufficient data for this evaluation and can be terminated.

Your prompt attention to this matter would be greatly appreciated. Thank you for your consideration.

Sincerely,



Anthony R. Brown
Project Manager

cc: R. Halsey, Atlantic Richfield
T. Moore, Atlantic Richfield
B. Johnson, Atlantic Richfield
N. Block, Esq., Atlantic Richfield
D. Yadon, AECOM
E. Petri, Weston Solutions
S. Riese, EnSci
A. Cohen, Esq., Davis Graham & Stubbs
W. Duffy, Esq., Davis Graham & Stubbs
A. Piggott, Esq., U.S. EPA
D. McCarthy, Copper Environmental
K. Pfeifer, Copper Environmental

file: Atlantic Richfield Rico Archives, La Palma, CA